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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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Portland, Oregon 97232-4181

IN REPLY REFER TO:

AES/EC

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Mr. Keith Klein, Manager
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

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Dear Mr Klein:

In 1989, the Hanford Nuclear Reservation primary mission of production of nuclear materials was phased out and environmental cleanup became a major mission under the authorities of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendment Reauthorization Act of 1986. The 1989 Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) between the Environmental Protection Agency (EPA), the Washington State, Department of Ecology (Ecology) and the U.S. Department of Energy (DOE) established the initial cleanup schedule for the Hanford Site to achieve future use goals and objectives. The Tri-party Agreement established a policy of releasing land for other uses once they were deemed cleaned. In March 1993, the Tri-Party agencies signed an Agreement in Principle in which they agreed to an expedited cleanup of the 1100 Area. This Expedited Response Action (ERA) for the 1100 Area, which includes the Fitzner-Eberhardt Arid Lands Ecology Reserve (ALE), was completed in 1996. The ALE Reserve has been administered by the U.S. Fish and Wildlife Service (Service) under an Memorandum of Agreement with DOE since June, 1997. On June 8, 2000, President Clinton signed a proclamation creating the Hanford Reach National Monument (Monument) which includes the ALE. The Service and the DOE will be developing a Memorandum of Understanding (MOU) as joint stewards of the nationally significant resources present on the Monument.

A 1993 letter from the Service to Mr. Walter Perro, DOE, expressed the Service's concerns regarding inadequacy of site characterization for landfills on the ALE and the North Slope, both of which were also included in the ERA. The Service's letter recommended additional surface soil sampling and collection of biological materials to determine if bioaccumulation of DDT was occurring. No wildlife sampling was done for the ERA to determine if concentrations of contaminants either before or after cleanup were a potential risk to natural resources. Because the Service was previously managing portions of the North Slope as a National Wildlife Refuge (NWR) and the ALE as a future unit of the NWR System, Department of the Interior policy on land acquisition required that a preacquisition contaminants survey be conducted.

The Service conducted a Level III Contaminants Survey beginning in the spring of 1998. The Columbia NWR near Othello Washington was chosen as a control area. The Service was attempting to determine if wildlife on the North Slope and ALE were being exposed

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to and accumulating, potentially harmful concentrations of organochlorine pesticides from former military sites located on the North Slope and ALE. Organochlorine pesticides were selected for investigation because of the high concentrations found in several landfills on the North Slope and ALE, the high bioconcentration factor for these compounds, and because of the documented effects on wildlife, especially migratory birds.

The results of the Level III Survey indicated that the pesticide DDT, including its primary metabolites DDD and DDE, occurred at the former U.S. Army landfills and facilities at concentrations greater than on the Columbia NWR reference site (Table 1). The mean total DDT and its metabolite concentration reported in beetles from Columbia NWR was 0.019 ppm. The site with the largest mean total DDT concentration was Horseshoe Landfill on the ALE (1.24 ppm.) The maximum concentration reported in a beetle sample (> 2.0 ppm), was also from Horseshoe Landfill. Small mammals collected at Horseshoe Landfill had elevated concentrations of mean total DDT of 0.94 ppm, with a maximum concentration of 2.26 ppm. Whereas, DDT was not detected in mammals at the reference site. The mean total DDT concentration in eggs from Columbia NWR was 0.087 ppm. The maximum concentration of total DDT reported (45.5 ppm) was from a horned lark egg collected from Horseshoe Landfill. Only one egg was collected from the ALE, which makes determination of impacts to migratory birds difficult. It is difficult to determine a threshold effect level for DDE induced egg shell thinning in Passerine birds. Most DDE studies have been conducted on bird megafuna. There are widespread interspecific differences in reaction of birds to DDE (Larry Blus¹, personal communication). Blus (1984) reported that Brown Pelicans had decreased nest success of 29 to 40 percent with eggs containing between 2.6 - 3ppm DDE and complete nest failure above 3.7 ppm. Elliot et al² (1994) reported that levels of DDT and DDE between 0.1 and 5ppm in eggs of tree swallows, house wrens, and bluebirds did not appear to be causing lower reproductive success. American robin eggs collected during the same study had up to 103 ppm DDE with no apparent impact upon reproduction. A study by DeWeese et al³ found that for tree swallows, DDE residues increased with the age of the birds. DDE stored in the body fat of tree swallows could become lethal if enough chemical became mobilized to the brain during periods of fat utilization such as egg laying. DDE concentrations in clutches of eggs with dead females ranged from 1.4 to 7.4 ppm. These studies indicate the difficulty in determining a site specific criteria level for DDT/DDE to exposed species.

¹ Lawrence J. Blus 1984. DDE in Bird Eggs, Comparison of Two Methods for Estimating Critical Levels. Wilson Bull, 96(2) 1984, pp. 268 - 276.

² J.E. Elliott, P.A. Martin, J.W. Arnold and P.H. Sinclair 1994, Organochlorines and Reproductive Success of Birds in Orchard and Non-Orchard Areas of Central British Columbia, 1990-91. Archives of Environmental Contaminants and Toxicology, 26:435-443 (1994).

³ Lawrence R. DeWeese, Robert Cohen, and Charles J. Stafford 1985. Organochlorine Residues and Eggshell Measurements for Tree Swallows *Tachycineta bicolor* in Colorado. Bull Environmental Contaminants and Toxicology, 35:767-775.

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For this reason the Service is requesting additional investigation of these sites. In our opinion, concentrations of pesticides in biological samples from the ALE may be high enough to cause injury to passerine songbirds, small birds of prey (kestrel) and small mammals. This conclusion is based on elevated concentrations of DDT and/or metabolites detected in biological samples and predicted risk from DDT and/or metabolites exposure.

Similar results were observed by the DOE in the spring of 1999 from a reassessment of residual DDT at three sites on the North Slope and at the Horseshoe Landfill on ALE. The DOE researchers collected similar biota which revealed DDT/DDE concentrations at similar concentrations to the Service study. In addition, in the fall of 1999, the State of Washington collected three soil samples at Horseshoe Landfill, analysis of which indicated that human health cleanup standards of 1 ppm for the site had not been met.

It is the opinion of the Service that the remediated Horseshoe Landfill still poses a risk to wildlife. Exposure to DDT and/or its metabolites at numerous sites on the Monument may be severe enough to be causing injury to migratory birds and other species of wildlife as well, and therefore jeopardizing the integrity of the monument. Defined injuries (43 CFR 11) that may be occurring at various sites on the ALE include eggshell thinning and reproductive impairment.

The Hanford natural resource trustees, consisting of the Nez Perce Tribe, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Nation, the United States Department of the Interior, the State of Oregon, the State of Washington and the DOE have completed a Preassessment Screen Determination (PAD), in accordance with 43 C.F.R. Part 11, Natural Resource Damage Assessments. The PAD will be provided by the Hanford Natural Resource Trustee Council to each agency's authorized official for consideration.

The Service looks forward to continued cooperation of management, investigation and additional cleanup needed for hazardous waste sites on the Hanford Reach National Monument and the Hanford Reservation with the DOE. If you have questions regarding our position related to further investigation and cleanup of contaminated sites on ALE and other areas on the Monument/Reservation, please contact Don Voros, Refuge Supervisor (503) 231-6167, Greg Hughes, Project Leader, Hanford National Monument/Saddle Mountain National Wildlife Refuge (509) 371-1801 or Don Steffek, Chief, Division of Environmental Contaminants at (503) 231-6223.

Sincerely,



Regional Director

Table 1

Concentrations of DDT
and its primary metabolites
DDD and DDE (in parts per million)

Receptor	Location			
	Horseshoe Landfill		Columbia NWR (reference site)	
	Mean	Maximum	Mean	Maximum
Beetles	1.24	>2.0	0.019	Below reporting limit
Small mammals	0.94	2.26	Below reporting limit	Below reporting limit
Eggs	(1)	45.5 (1 sample)	0.087	0.18

1) Only a single egg was collected at Horseshoe Landfill